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ABSTRACT

This discussion of teacher expectations attempts to delineate the research steps that are needed to convincingly validate or invalidate the Pygmalion Effect. Five elements of expectancy effects are identified: (1) Information provided to teachers, (2) their expectancies, (3) behavior, (4) children's achievement and (5) intelligence. An examination of each of these elements and the linkages among them, in reference to the existing teacher expectancy research, suggests numerous alternative hypotheses and explanations to those in the literature. The literature review analyzes each study in terms of effects demonstrated, teacher characteristics, and the linkages investigated. Reinterpretation of these reports indicates the existence of "class 2" linkages, for example, student achievement influencing teacher behavior and expectancy rather than "class I" linkages in which the teacher expectancies influence the child's performance. The ethical and practical dangers of expectancy research are emphasized, particularly with regard to unfair criticism of the teacher. The need for careful interpretation of such research is based on the methodological, as well as logical and empirical uncertainty of the area. Finally, the report suggests four areas of research that would be most helpful in clarifying the issues discussed. (DP)

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A REVIEW OF THE TEACHER EXPECTANCY EFFECT: THE QUESTION OF PREPONDERANT CAUSATION*

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*A final report to the ERIC Clearinghouse on Early Childhood Education, 805 West Pennsylvania, Urbana, Illinois, 61801

The research of Rosenthal and Jacobsen (1968) kindled a massive amount of research and literature on the effects of teacher expectation on the achievement of students. After five subsequent years of research and analysis the validity of the effects of teacher expectation is still questionable and controversial, Rosenthal's (1973) protestations not withstanding.

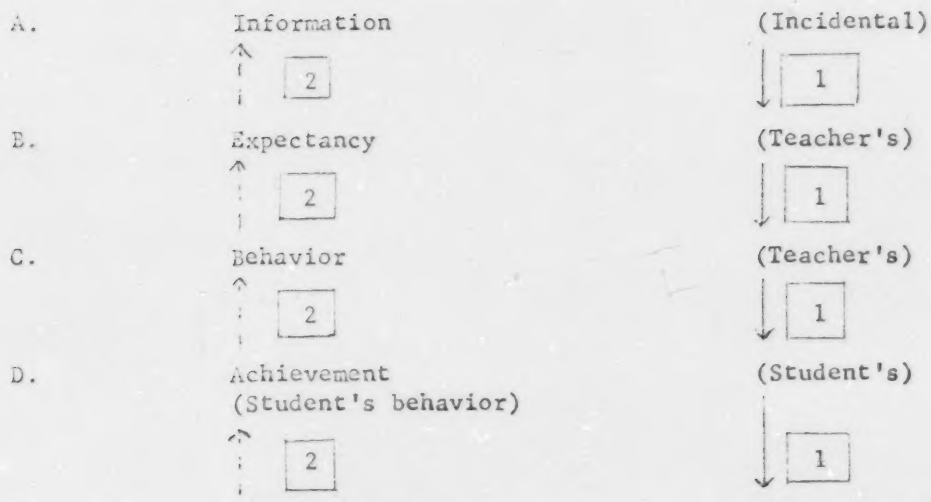
Since many of the teacher-expectancy studies involve nursery school and elementary grade students (Rosenthal and Jacobsen, 1968; Beez, 1968; Henrickson, 1970; Jose, 1970; Long and Henderson, 1972; Maehr and Rubovits, 1973; Moore, Gagné and Hauck, 1973; and Brophy and Good, 1972) this area of research should be of special interest to early childhood educators. Of course, any effect of such a nature to influence potentially the education of millions of students -- if the effect is valid -- or to indict wrongly thousands of teachers -- if it is invalid -- will be of interest to early childhood educators.

This paper is intended to outline the logical and empirical linkages or elements necessary to a forthright, convincing demonstration of the validity or invalidity of the teacher-expectancy effect. Experimenters might consider linking these elements in convincing ways and reviewers might consider examining the teacher-expectancy research in terms of these linkages.

Teacher expectancy may be separated effectively from self-expectancy and self-aspiration literature and research. Although Finn (1972) elects to develop a comprehensive expectancy model involving both self and others' expectations, there is no necessary connection between the two. Although one could easily relate a person's aspirations to a person's achievement, this paper concerns only the teacher-expectancy literature and research.

Although few readers will be unfamiliar with the alleged elements of teacher expectancy, a brief overview may be helpful. Information is passed to the teacher identifying students who will be expected to do well in that teacher's class. It is claimed that this information creates an expectancy on the part of the teacher that the student will perform consistently with the direction stated in the casual information. Usually the information is in a positive form (e.g., you may expect that these students will do well this year). It is implied that teachers form expectancies that some students will not do well and that negative expectancy also causes or is associated with poor performance and intellectual decline. It is further asserted that this expectancy is related to the teacher's behavior toward the student. That is, that the teacher treats those whom they expect to succeed and not to succeed differently. In turn, it is professed that these differences in teacher behavior influence the school achievement and measured intelligence of the student usually within a few months. Thus, the advocates of teacher expectancy assert that there is a chain of influencing events from the provision of the teacher with information to a change in the student's intelligence. Researchers since Rosenthal and Jacobsen (1968) have tended to claim achievement effects, but not intelligence effects. Of course, differences between achievement and intelligence blend into a matter of psychological definition.

In Figure 1 five elements (INFORMATION, EXPECTANCY, BEHAVIOR, ACHIEVEMENT, and INTELLIGENCE) which are claimed to be associated with teacher expectancy may be connected to form eight one-stage linkages and, logically, twelve multiple-stage linkages. (Understand, we are only outlining the steps necessary to the



Class 1 linkages (necessary to teacher-expectancy effect, but not sufficient)

AB*
A(B)C** BC*
A(B)(C)D** B(C)D** CD*
A(B)(C)(D)E** B(C)(D)E** C(D)E** DE*

Class 1 linkage
= Proteacher-expectancy researchers and reviewers claims these to be major sources of variation (or preponderant causes).

Class 2 linkages (hypotheses competing with Class 1 linkages)

ED*
E(D)C** DC*
E(D)(C)B** D(C)B** CB*
E(D)(C)(B)A** D(C)(B)A** C(B)A** BA*

Class 2 linkage
= Teacher-expectancy researchers and reviewers claim linkages to be major sources of variation (or preponderant causes).

*1-stage linkage
**multiple-stage linkages
( )mediators

Figure 1.--Elements and Linkages of Teacher-Expectancy Literature

validation of teacher expectancy, not establishing the validity.) A one stage linkage consists of two elements connected (such as information-expectancy or teacher behavior-achievement). A multiple stage linkage consists of more than two stages.

An example of a one-stage linkage is that of AB incidental information is assumed to be connected to (or to influence) teacher expectancy. An example of a multiple-stage linkage is A(B) (C) (D)E. In this linkage, B,C,D (EXPECTANCY, BEHAVIOR, ACHIEVEMENT) are mediational variables, mediating between A (INFORMATION) and E (INTELLIGENCE).

The solid arrows represent alleged directional sources of variation (or preponderant causes, or associations, correlations, connections, influences) which tend to be advocated by the teacher-expectancy believers. These Class 1 linkages are those linkages which must be supported empirically before the teacher-expectancy effect is validated.

It is likely, on the other hand, that empirical, logical, and psychological evidence more firmly supports Class 2 linkages represented by the broken arrows. Class 2 linkages may be greater sources of variation (more "powerful" or preponderant causes, correlations, associations, influences) than Class 1 linkages. Validated research on these Class 2 linkages reflect, at the least, competing hypotheses (competing with its corresponding Class 1 linkage) and are the most overriding explanations. It may be, then, that these Class 2 linkages reflect preponderant causal connections which negate the class one linkages. For example, the students behavior (D) may generate teacher expectancy (B) (this is a D(C)B linkage) to a greater extent than teacher expectancy generates student achievement (a B(C)D linkage).

Information

The following examination of each element and its associated linkages may increase the sensitivities of researchers and reviewers to some of these competing hypotheses. The element, INFORMATION, should be broadly conceived as a collection of data about a student from a variety of sources. The broader conception may rule out the possibility of effects for information incidentally supplied to the teacher. That is, a teacher may collect a great deal of information about a student from a variety of sources. Such sources of data as the student's own present behavior, past behavior, records, grades, achievement and intelligence tests or interviews and conversations with previous teachers, students and parents are likely to be used by the teacher or to influence the teacher behavior. The experienced teacher is likely to resolve any conflicting information by observing the student's behavior and forming an opinion (expectancy) for himself (a D(C)B linkage). The experience of the teacher may be an important variable. Four of the rare successful attempts to show any information-expectancy behavior linkages (A(B)C) have used inexperienced female university students /Rubovitz and Maehr (1971, 1973); Rothbart, Dalfen, and Barrett (1971) and Beez (1968)/ as the "teachers," during a brief interaction interval. An inexperienced teacher may lack the skill to judge and then to evaluate continually the information generated about students. If the student-teacher interaction period is short there are fewer opportunities for the teacher to validate or invalidate the information by observing the achievements (behaviors) of the student. In Claiborn's (1969) and Anderson's (1970) failures to replicate the Rosenthal and Jacobsen (1968) findings, the teachers were employed classroom teachers. This is also the case in Jose and Cody's (1968) failure to replicate. Jose and Cody detected no BC linkage and no A (B) (C) D linkage.

Many writers have not only found the Pygmalion effect credible but also have claimed that such expectancy effects abound in classrooms in which no outside person, no experimenter, has provided information. From the research of Milgram (1963, 1965) it is known that persons generally find the "expert" or "authority" credible. Generalizing from Milgram's research it is easy to accept the fact that some inexperienced teachers believe the "expert" who provides information about students who should do well during the following months. It is one thing to accept the gullibility of some teachers, experienced or inexperienced, in the face of information from an "authority". It is another to claim that teacher expectancies based on trivial information occur in the typical classroom. In other words, the expert's statement is an important stimulus for the formation of the teacher-expectancy effect. It has not yet been established that such expectancies are formed apart from attitudes based on the actual behavior of the students. Rist (1970) argues eloquently that ghetto teachers form expectancies based on trivial information other than statements by experts. He also claims that these expectancies persist and are never revised by the teacher. Rist's (1970) data are anecdotal, however, as well as unconvincing. One is struck by a lack of objectivity and by a lack of supportive observations by other observers in this study.

Expectations

The possibility of the constant revision and validation by the teacher leads to further consideration of the second element, expectation. Some of the advocates of teacher expectancy apparently believe that teachers' attitudes toward students--at least the teacher achievement expectations--are based on random, irrational sources of information, which we have termed incidental. The teacher forms this

expectancy and if one is to believe the proteacher expectancy literature, the teacher's expectancy is never revised. It would seem that experienced teachers, even if they did take note of incidental information, would revise continually any associated expectancy.

In contrast with the view that teachers do not note student behavior is a study by Klein (1971). In that study students varied their positive (attending) behaviors and negative behaviors (non attending, not answering questions, etc.) according to an established experimental schedule. In Klein's (1971) study these student behaviors changed the teachers behavior quite markedly. This study indicates that student behavior markedly influences teacher behavior.

Expecting all students to do well and assuming that this would be harmless may well be a fallacy. In an A(B) (C) D study Anderson (1970) found that students who were characterized as "bloomers" did not achieve any better than controls. The "bloomers" were, however, characterized by negative affective differences at the end of the experiment which Anderson (1970) attributes to (1) the teacher believing the information and (2) the teacher prodding the "bloomers" toward achievement levels beyond which the "bloomers" felt themselves capable.

Expectations are attitudes, if anything. The problems of measuring attitudes, locating their developmental learning histories in individual persons, and showing correspondences between attitudes and behavior (Fishbein, 1967, pp. 477-492) are ignored by the advocates of teacher-expectancy influences. One is asked to believe that one can easily induce relatively lasting, specific attitudes which determine and predict the attitude holder's behavior over long periods. Contrasting such a position Fishbein after reviewing appropriate literature, concludes

> Indeed, what little evidence there is to support any relationship between attitude and behavior comes from studies showing that a

> person tends to being his attitude into line with his behavior rather than from studies demonstrating that behavior is a function of attitude (Fishbein, 1967, p. 477).

If, of course, teachers behave in ways detrimental to the achievement of students the sequence of formation of teacher attitudes and behavior is relatively unimportant for educators. But the sequence of attitude-behavior formation is important for teacher expectancy research.

Some beginning points of Class 2 linkages between student achievement and teacher expectancy and behavior have already been mentioned--student behavior, achievement, test scores, etc. Hypotheses related to other Class 2 linkages may arise from the notion that a teacher's expectancy would give rise to information hunting and gathering. Of course, perceptual set accompanying any expectancy might bias the data noted and emphasized. In any case, information could be gathered from a wide variety of sources other than that provided so incidentally. Admittedly such hypotheses are based on the existence of an identifiable expectancy.

Teacher Behavior

The third element, behavior (teachers'), is associated with many tangled issues. Estimates of the extent to which school quality influences the students' achievement vary from slight to great (Coleman et al., 1966; Stephens, 1967). The achievement variance contributions of specific teacher behaviors surely would be only a portion of total school contributions, whatever the extent of the school's total contributions. This is not to deny that teachers produce differential effects on student performance. Teachers vary in respect to their effectiveness.

Another tangle involves the extent to which teachers are significant to students. Contrary to this position the literature (Coleman, 1961; Epperson, 1964)

agrees that teachers are relatively insignificant when compared to the significance of other students and of parents. It would appear that teachers would of necessity have to be highly significant others before teachers' behaviors would contribute greatly to variance in student achievements.

While the element, behavior, could also include the students' behavior, the student's behavior is considered in the element, achievement. In most learnings student behavior and achievement are equivalent. In the strictest, behavioristic, sense achievement is behavior. What the student does may have more to do with his achievement than what the teacher does. Indeed, one may be pressed to deny that student behavior is a mediating or intervening variable between teacher behavior and student achievement. It may be argued tentatively that teachers' behavior may only gain importance through the induction of student behavior which otherwise would not have occurred. Many student behaviors result in achievement gains without teacher behavior being involved.

The student's behavior may have much to do with the teacher's behavior (Klein, 1971) and with the teacher's expectations. It would be unusual for the teacher expectancy and behavior toward a student to be independent of the student's behavior and achievement. It would also be questionable to assume the teacher's behavior to be consistent in the face of variations in the student's behavior and the teacher's own day-to-day dispositional variations in the absence of supportive data.

Henrickson (1970) found impressive A (B)(C) D (information-achievement) effects, but not A (B)(C)(D) E (information-intelligence) effects. These findings however, are suspect in view of the imbalanced subject attrition in the study. Henrickson's description indicates that an almost equal number of subjects

were assigned to experimental and control groups (total n-76). Seventy-six children were pretested and Henrickson's description indicate that all of those pretested were assigned to either experimental or control groups (p. 36). Yet achievement gain scores for 32 control subjects and 19 experimental group subjects are analyzed (degrees for freedom based on number of students and not classrooms). Obviously subject attrition was imbalanced with 19 of the 24 lost subjects in the experimental group. Attrition imbalances such as these reduce the credibility of findings.

Brophy and Good's (1972) claim that there is no longer a question that the teacher-expectancy effect is valid (self-fulfilling prophecy in their language) is after all an assertion. Brophy and Good's review (1972), Good and Brophy's research (1972) and Brophy and Good (1970) indicate the strong possibility of DC, D(C)B linkages with few of the Class 1 (CB, B(C)D) linkages. As long as expectancies (teacher's) are based on the actual achievement (behavior) of students, there is no self-fulfilling prophecy involved. Teachers must and should, for both educational and humane reasons, continuously adjust their demands on students and expectations of students to the actual achieving levels or behavior of the students.

Finn (1972) terms those teacher attitudes which seem to be generated from actual observance of student behavior, natural expectancies. Several studies which have been interpreted to support teacher expectancy may provide support for these kinds of teacher judgments. A teacher judgment, attitude, or expectancy, formed by the teacher after observing the behavior is a D(C)B linkage. The expectancy data of several of the studies reviewed by Brophy and Good (1972) seem to denote that these attitudes emerge as a result of the behaviors of the student (the element

Achievement). This is definitely the case in the Good and Brophy (1972) study. In that study teachers ranked students in terms of their expectations from high to low in late September. The teachers had had ample time to observe the achievement levels of students and then form expectations. Teachers ranked the students, incidentally, because the investigator asked them to do so. Observation of teacher behaviors followed. It was not until December that other teacher attitude data was collected. There is no evidence to show that the attitudes of the teachers were formed on bases other than the behaviors (achievement) of the students themselves, although the requests of the investigation was a stimulus for rank data. Palardy, (1960) also supports the existence of D(C)B linkages rather than B(C)D and CD linkages. Fleming and Anttonen's (1971) data clearly indicate that teachers form attitudes or expectations based on the actual behaviors of students (D(C)B linkage).

Meichenbaum, Bowers and Ross (1969) also interpret their findings as showing information to achievement effects /$\bar{A}$(B)(C)$\underline{D}$/. Actually the observed /$\bar{A}$(B)(C)$\underline{D}$/ effect may be due to the fact that one-half of those said to be "late bloomers" by the experimenter had already been identified as high potentials by the four teachers. These teachers had four weeks to form an expectancy based on the students actual behavior. Analyzing this variable would have reduced the sample excessively (1969, p. 310). In this study, the A(B)(C)D (information-achievement) linkage influences are contaminated by D(C)B (information-expectancy) linkage influences.

In the cases in which expectancy effects are demonstrated expirically the timing of the formation of the teacher expectancy (or rating) is crucial. When the teacher's expectancy is formed after a period of teacher-student interaction there is no reason to assume that teacher expectancy caused later achievement or lack of achievement. This may only mean that teacher's ratings are related to subsequent pupil performance as well as time of rating performance. Most of

the studies discussed above involved asking the teachers to rate the students after a period of teacher-student interaction. This is the case in Brophy and Good[8] (1970), Good and Brophy (1972), Meichenbaum, Bowers, and Ross (1969), Cornblith, et al. (1972) and Mendoza, et al. (1971). These studies should be interpreted as indicating relationships between teacher judgments of performance and later pupil performance. It should not be surprising that teachers can predict later performance of students since we know that present performance is one of the best predictors of later performance.

Studies in which there are no teacher-student interaction contamination

In some studies (see Figure 2) information is supplied to the teacher prior to any student-teacher interaction. This precludes experimental contamination of teacher expectancy based on teacher-student interaction. These studies should provide clearer indications of information (A) and expectancy (B) influences in the studies in which experimental effects are noted. Of the eleven investigations noted in Figure 2 six resulted in effects for information and five did not. Of the six which find effects only two (Finn, 1972 and Rosenthal and Jacobsen, 1968) involved classroom teachers, and Finn, 1972, found effects only for urban teachers but not for suburban teachers. Of those five studies which did not find effects all five involved classroom teachers. This may indicate that the experience of teaching may well influence the potential effect of such information. In any case, teacher experience may be a variable which should be more carefully controlled in future expectancy studies.

Experimenters should also be reminded by an inferiential problem. Infering that teacher expectancy is formed when information produces an effect on teacher behavior or pupil performance may be an error. In any case it is an inference.

Description of "teacher"	Study	Linkage investigated	Experimental effects noted
Classroom teachers	Anderson, 1970	A-D	no achievement effects
Classroom teachers	Rosenthal & Jacobsen, 1968	A-E	intelligence effects
Undergraduate students	Rubovits & Maehr, 1971	A-C	teacher behavior effects
Undergraduate students	Rubovits & Maehr, 1973	A-C	teacher behavior effects
Graduate students	Beez, 1968	A-D	achievement effects
Classroom teachers	Long & Henderson, 1972	A-B	no effects
Classroom teachers	Jose, 1970	A-C,A-D,A-E	no effects
Classroom teachers	Jose, & Cody, 1968	B-C, A-D	no effects
Undergraduate students	Rothbart, Dalfen & Barrett,1971	A-C	effect
Classroom teachers	Claiborn, 1969	A-E	no effect
Classroom teachers	Finn, 1972	A-C	effects for urban teachers essay grading

Figure 2. Studies which supply false information and which seem uncontaminated with teacher observations.

We know that in six of these studies information produced an effect, but we know little about what happened by way of the teacher "in-head" expectations.

The communication of expectations to students

Some investigators take action to insure that teachers note the information assumed to create the expectancy (Anderson, 1970) and some are noteworthy in that the assumed teacher expectancy is communicated to the student directly (Anderson, 1970; Moore, Means, and Gagné, 1973; Moore, Gagné and Hauck, 1973; and Gagné and Biddle, 1973). In the studies in Figure 2, it is assumed that "teacher's"were not aware of the fact that expectancy effects were being studied. If the "teacher" is to communicate an expectancy to a student in an experimental situation the "teacher"is aware of the fact that expectancy effects are being studied. In the direct communication of expectancy studies the teachers are aware of that fact/(except for the Anderson (1970) study)/.

In the Moore, Means, and Gagné (1973) study expectancy statements about the likelihood of doing well or poorly on a reading comprehension task was communicated to high school students. Students were also given positive or negative feedback as to their success. Results of the study indicate no main effects for expectancy. There was an interaction between expectancy and feedback. The two groups performing highest were the low expectancy positive feedback group and the high expectancy negative feedback group.

In the Moore, Gagné and Hauck study involving direct communication of expectancy with fourth grade subjects results indicate a significant feedback x expectancy by intelligence interaction. The low intelligence group surprisingly did better under the condition of low expectancy. The dependent variable measure consisted of recall of names of familiar objects. Sixteen pictures of the objects were presented and the subjects recalled as many as possible.

Gagne and Biddle (1973) with fourth grade subjects found a main effect for expectancy and an interaction between training and expectancy. The dependent measure was much like the Moore, Gagne and Hauck (1973) investigation. The training effect appears to be a feedback treatment basically. In this study the high expectancy group did better. Anderson (1970) with high school subjects found no achievement effects for expectancy.

Thus, in four investigations in which expectancies were communicated directly to students, the high expectancy group did better in one study. In one of the studies the low IQ, low expectancy group did better. These three investigations are noteworthy not only because of the direct communication of expectancy treatment but also because of their sensitivity to the possibility of feedback and intelligence interactions.

The expectancy statements in three of these studies possibly leave some room for individual subject interpretation. The expectancy statements somewhat simplified were as follows.

(1) I think you can do (really well, better than most, a good job) on this one. (for the high expectancy)

(2) I don't think you'll do (well, very well, as well as most) on this one. (for the low expectancy)

It is not known whether subjects interpreted such statements as a reflection on their ability or as a reflection on the difficulty or lack of difficulty of the task. The task interpretation could become a challenge for some students. Indeed, Moore, Gagne and Hauck (1973) tentatively conclude that the low expectancy statements increased the effort on the part of both low and high IQ subjects. This would tend to indicate that the task interpretation may have prevailed

Achievement

The fourth element, achievement, may be seen as more dependent on the student's behavior than the teacher's. It may also be seen as influenced greatly by factors "outside" the school. What about the linkages between achievement and intelligence (DE) and intelligence and achievement (ED) even though adequate control groups make it a moot point in expectancy research. A traditional view has it that intelligence "causes" achievement and, indeed, many studies may be interpreted in such a way. Crano, Kenny, and Campbell (1972), on the other hand, very competently investigate the possibility that achievement "causes" intelligence. This has to be the case if teacher expectancy theory is valid. This heavily weighted environmentalistic position does not, however, necessarily support teacher expectancy research. It is necessary to an expectancy agrument but not sufficient. On the other hand, a view of intelligence which accentuates genetic contributions points to ED linkages and not DE linkages. Cattell and Bucher's (1968, p. 19) intelligence factor fluid and Newland's process (Newland, 1963) are also supportive of DE linkages.

Obviously one should not draw a strict dichotomy between in-school achievement and intelligence as each currently can be measured. Nonetheless, intelligence facilitates achievement (ED) even if intelligence is primarily "composed of" previous achievement.

One sophisticated study employing path analysis on measures at three time points on high school students emphasizes the effects of student's own behavior on achievement (as well as ability). On the expectations of teachers Williams (1972), found that the principle cause of variation in achievement is the student's ability (an E-D linkage). He also found that teachers expectations

are affected by the students performance in the school /(a D(C)B linkage)/. By measuring pupil achievement, ability, and teacher expectancy on several occasions Williams was able to look at not only what we are calling Class 1 linkages but also Class 2 linkages. In this study Class 2 linkages not supporting teacher expectancy effects were found. In terms of preponderance of effects the Williams (1972) study finds student ability and achievement the preponderant cause of teacher expectancy.

Summary

An examination, then, of each of the elements with associated linkages suggests numerous hypotheses which compete with the proteacher-expectancy literature. It is recommended that investigators interested in teacher expectancy select single-stage linkages for research. Considering the apparent complexity of each linkage epitemized by the Crano, Kenny, and Campbell (1972) study, it would be wise for an investigator to so limit any single investigation. Considering the strong possibility of numerous competing hypotheses within both Classes 1 and 2 linkages between elements, acceptable methodology requires a careful comparison of preponderance of effects. Comparison between Class 1 and Class 2 linkages should be possible with current methodology.

The question termed by Crano, Kenny and Campbell (1972) as the question of preponderant causal sequence which they applied to achievement and intelligence linkages may also be applied to other linkages outlined in Figure 1. Of course, such questions are based on beliefs in the existence and possibility of observance of cause-effect relations. Cause-effect literature such as the discussion by Wartofsky (1968, pp. 291) reveals much controversy on this. Identifying which is cause and which is effect is especially controversial and problematical. Crano,

Kenny and Campbell (1972) reveal a sophisticated appreciation of interaction and transaction between achievement and intelligence which is not typical of the proteacher-expectancy literature and research.

By way of summary it seems that reinterpretation of much of the teacher expectancy (or self-fulfilling prophecy) research indicates the existance of class two linkages (for example, student achievement influences teacher behavior and teacher expectancy) rather than class one linkages (for example, teacher expectancy influences student achievement). In the one study which actually compares class one linkage effects with class two linkage effects the class two linkage effects are preponderant (Williams, 1972).

Early childhood educators are encouraged to note the preponderance of effects for class two linkages. The findings in the area of teacher expectancy are very mixed, For example, in some studies, the low expectancy treatments result in higher achievement while in others the high expectancy group performs better. Early childhood educators should also note that the most convincing teacher-expectancy effects are found for younger subjects.

No group more than early childhood educators should be more sensitive to the multi-faceted nests of ethical dilemmas involved in this research. There are possible adverse effects as well as possible positive effects involved in low and high expectancy treatments on students in the affective domain (Anderson, 1970) as well as in the cognitive domain.

Another dilemma involves the effects of this research and literature on the feelings of teachers. Harmful expectancy effect findings may produce large scale attacks on teacher competency and effectiveness, not to mention the guilt involved. We should be very cautious in interpreting studies which have such broad and obvious implications.

Many reviewers have tended to criticize the teacher-expectancy effect research only in terms of methodological difficulties. This overview is intended to convey that the teacher-expectancy effect research may not only have methodological difficulties, amply reviewed by Snow (1969), Gephart and Antonoplos (1969), Thorndike (1968), Elashoff and Snow (1971), but also explicative problems of a logical, empirical and psychological nature. It should be mentioned that Elashoff and Snow (1971) also discuss some of these explicative problems.

Since research and discussion of the alleged teacher-expectancy effects may be expected to continue, our knowledge would be greatly aided by research from a variety of theoretical positions in at least four areas:

1. the sources of teacher's information about students and teacher patterns of interpretation and validation of the information [as exemplified by Fleming and Anttonen (1971)],
2. the nature of sources of, and stability of teachers' specific and general attitudes toward students,
3. the correspondence between the teacher attitudes toward students and behavior toward students (as exemplified by Silberman, 1969; Jackson, Silberman and Wolfson, 1969), and
4. the employment of the Crano, Kenny, and Campbell (1972) design at each competing linkage point.

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